

**EUROPE
1992
AND
CANADA'S
SOFTWARE
INDUSTRY**

External Affairs and
International Trade Canada

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**CANADA
EUROPE**

Canada

**EUROPE 1992
AND
CANADA'S SOFTWARE INDUSTRY**

THE SOFTWARE MARKET IN FRANCE

prepared for

**European Community Division
External Affairs and International Trade Canada**

by

**CXP
Paris**

September 1991

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FROM THE GOVERNMENT OF CANADA

External Affairs and International Trade Canada (EAITC) is pleased to offer the Canadian software industry, as part of the Going Global trade strategy, this study on the software market in France.

Europe 1992 is happening now. The European Community's ambitious Single Market program has already dramatically changed the way Europeans are doing business. The process is irreversible; the pace is rapid and accelerating. If Canadian businesses are to profit from the opportunities that this enormous market will bring, they must be well informed.

That is one of the responsibilities that EAITC assumes. This publication, drawing from the experience of successful Canadian firms, is a practical guide to the issue of market access and the business environment in four European countries; the United Kingdom, France, Germany and the Netherlands.

We also have tangible programs to introduce you to the European market. These are well-publicized through our CanadExport publications. Our trade officers in the European Community Division of EAITC and at the International Trade Centres in each province would be pleased to respond to your specific questions. Take advantage of these programs. They have been established to benefit you.

Publications that are currently available from the series *1992 Implications of a Single European Market* include: Agriculture and Food Products; Telecommunications and Computers; Automotive Industry; Minerals and Metals; Forest Products; Defence, Aerospace and Transportation; Specialty Chemical Products, New Materials, Pharmaceuticals and Biotechnology; Industrial Products and Services; Financial Services; Fisheries Products; and Professional and Consulting Services – Law and Accounting.

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For more information on publications available, please contact the EAITC InfoExport hotline, 1-800-267-8376.

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PREFACE

The purpose of this study is to provide information to Canadian software vendors and help them approach the French software market for:

- CASE and object-oriented programming;
- 4th-Generation languages and DBMS;
- geographic information systems;
- graphics and image processing
- communications and networking applications;
- utilities; and
- health information systems.

Software is:

a complete and coherent group of programs, services and supports for handling information and related documentation. It is a standard product designed to be used by the largest possible number of users, as opposed to a specific program designed for the needs of a single user.

1. THE FRENCH SOFTWARE MARKET

1.1 Overview of the French Software and Services Market

The two principal groups working in the French software and services market are computer manufacturers and computer engineering and services companies (CES). They offer a range of services:

- studies and advice;
- engineering;
- design of specific programs;
- software sales; and
- training.

There are 500 computer manufacturers and 4,600 CES on the French market. These suppliers are concentrated in three regions:

- Île de France;
- Rhône-Alps; and
- Provence-Côte d'Azur.

In 1989 the French software and services market was worth C\$14.2 billion; the CES companies' share accounted for 53.5% of this amount.

In 1990 the French software market increased 25% from 1989 to C\$3.8 billion, while the activities of CES firms increased 16%.

Activity in the first half of 1991 was slow for most participants on the computer market, especially for manufacturers. However, CES firms were less restrained, even though their growth rate was expected to be 10% lower that year than in 1990.

1.1.1 The French Software Market on the European Scale

At present, the European software market is strong. The IDC and Input studies agree on expected yearly growth rates of 18% to 20% from now to 1993. The European software market should be worth more than C\$30 billion 1993, accounting for almost one-third of the total software and services market in Europe.

In France, the market will follow this trend and reach C\$6-7 billion by 1993.

1.2 Software Distribution Channels

CXP surveyed 3,570 software dealers in France with widely varying profiles.

1.2.1 Importers

Importers distribute software brought in primarily from the United States. These are office automation software (e.g., word processing, graphics) and microcomputer tools (e.g., utilities, communications, file management). They may or may not translate these products into French; thus, the value added by these distributors is relatively low. This is an appropriate channel for distributing low-cost software that requires little or no customer support.

Examples: La Commande électronique and Microsigma.

1.2.2 French Subsidiaries of Foreign Companies

These are subsidiaries of large, often American software manufacturers. They are well positioned in the DBMS and CASE fields, and are gaining ground in the applications field, including office automation and business management.

Most of these companies entered the French market by working with a local distributor before creating a subsidiary. It is important to note that 90% of the income of foreign CES firms in France is generated through software sales.

Examples: Computer Associates, D&B Software, Microsoft and Oracle are American with French subsidiaries that supply management software for mini and mainframe systems. Software AG and SAP are two German software companies with subsidiaries in France.

1.2.3 Manufacturers

Most manufacturers produce systems or office automation software; however, they are moving into the services market as they become more interested in vertical markets such as small- and medium-sized businesses. Manufacturers enter the software market through partnership agreements with CES firms experienced in the applications field. This strategy translates into business agreements, minority shareholding or the creation of joint subsidiaries.

Examples: IBM France and Prisme, which specializes in management software, created a joint distribution subsidiary. There have been similar examples in other sectors. IBM also created a joint software distribution company, Progipt, with 18 AS/400 agents.

1.2.4 Consulting and Planning Firms

These firms have extended their traditional consulting and planning activities to include software and now play a major selection role in the market. They may have their own software development arm or they may become business associates of CES firms.

Example: Andersen Consulting market CASE programs (the Foundation CASE program) and production management software (MacPac). CES Dataid and Peat Marwick have created an Economic Interest Group.

1.2.5 The Large French CES Firms

Along with their specific development activities, large CES firms are becoming more involved in software development and sales. They dominate the management software market for medium-sized and large businesses. The international income of French CES firms grew 26% in 1990 because of acquisitions. Research and development activities generate 4% to 5% of their sales.

Examples: CGI Informatique, which distributes PAC Base, installed in more than 700 sites in Europe and the United States. This company's software activity represents 33% of its total activity, or C\$101 million in the 1989-90 fiscal year; at the same time, research and development in all areas amounted to C\$11.6 million.

1.2.6 French Software Writers

There are many French software writers. Some writers sell significant quantities of management software for micro-computers and mini systems because they are supported by the networks of major distributors.

Examples: SAARI (has more than 1,000 sellers. This accounting program has sold more than 15,000 copies), Memsoft, etc.

Many small businesses have filled some of the gaps in technological areas such as CASE, robotics and expert systems, and in vertical markets aimed at particular activities. These companies, some with only regional markets, sell hardware and software. Despite sales that range between C\$4 million and 30 million, these businesses have weak financial structures and are experiencing major difficulties.

Finally, some large French businesses do not hesitate to look outside their borders for products

that may meet their needs. Until now, this type of purchasing had been limited to users looking for development products and for whom availability of the software in French was a secondary acquisition criterion. The varying prices for the same product between the United States and France and other European countries can encourage this type of purchasing for other software. At present some companies – especially in the banking and health fields – are looking elsewhere to find management software, having explored the French market without success.

1.3 Supplier Characteristics

In August 1991, CXP surveyed 12,300 software packages sold on the French market. According to its area of application, the packages were distributed as follows:

- 24% to developers in three categories:
 - telematics and local networks that include communications products and various types of hardware,
 - systems operations,
 - CASE, data management, artificial intelligence (AI).
- 22% to business management – accounting, payroll and personnel management, production and maintenance management.
- 11% for strong scientific and technical use – graphics, CAD/CAM, mathematics, statistics and engineering.
- 9% to financial, banking and insurance institutions – financial analysis, cash management, banking techniques.
- 6% for documents management and office automation.
- 28% to specific sectors of activity, for example health, local communities and distribution.

1.4 The Foreign Presence

French companies developed 78% of the software sold on the French market; American or Canadian companies developed 17%; and European (mostly English and German) companies developed 5%.

Foreign-designed products may be distributed by any of the participants on the French software market described in section 1.2.

Market segment figures reflect the strength of American products:

- development tools – 41%;
- document management and office automation software – 27%; and
- scientific and technical software – 19%.

The American presence is very weak in applications for business management and activity-specific software but may be making inroads in other market segments, such as accounting or project management packages for use with mainframes.

CXP surveyed 59 programs sold in France that were developed by Canadian companies. The strong points of these products are:

- data management and applications development; and
- office automation and documents management.

1.5 General Trends in the Software Market

1.5.1 Business Management Software

Computerization in French businesses has developed unevenly. Although software is used extensively for accounting, payroll, personnel management and cash management, very few businesses use software for maintenance or purchasing management.

Accounting Software

The trend is to compartmentalize applications and internationalize business needs in this area.

Electronic data interchange (EDI) programs for industrial accounting have been developed, and an accounting data base for normalization at the European level should be working by 1 January 1993. This program is intended to harmonize the collection and retrieval of credit information.

- Big Names on the French Market (program followed by name of vendor):
 - for mini and mainframe systems
 - a) GL Millennium and GL Expert (D&B Software)
 - b) Harmonic (CFI)
 - c) Masterpiece (Computer Associates)
 - d) R/2-RF, RK (SAP)
 - e) SIGA Comptabilité (CGI)
 - f) Tolas Finance (GSI)
 - for microcomputers
 - a) SAARI Comptabilité (SAARI).

Capital Assets and Cash Management Software

Capital assets management includes accounting, investment management and the physical

management of property. In France there is little competition in the cash management software sector. Products that strengthen bank-business relationships have experienced strong growth.

- Big Names on the French Market:
 - Concept
 - Guillemot Informatique

Payroll and Personnel Management Software

The trend is to departmentalize applications. Cooperative and client-server processing is developing along with the decentralization of the personnel function.

- Big Names on the French Market (program followed by name of vendor):
 - for microcomputers
 - a) Gamme Hay (Hay 2000)
 - b) GP Plus (AXYS)
 - c) Hera (Sopra)
 - d) Ressource 3000 (GSI)
 - for mainframes
 - a) Alpage Plus (GFI)
 - b) Pacha Expert (Sopra)
 - c) Popaye (PSI)
 - d) Sigagip Personnel (CGI)

Production and Maintenance Software

Small- and medium-sized businesses have created strong demand for production management software but most of the companies have not been using the software long enough to require maintenance products.

- Big Names on the French Market (program followed by name of vendor):
 - a) MacPac (Andersen Consulting)
 - b) Mapics DB (IBM France)
 - c) Prodstar MRP (Prodstar)
 - d) Tolas Production (GSI)
 - e) Tzar II (Production Systèmes)

Commercial Management Software

As awareness of the marketing and sales force dimensions increases, real commercial information systems are being introduced. EDI programs should quickly lead to concrete results because governments use direct billing.

- Big Names on the French Market (program followed by name of vendor):
 - a) Control Manufacturing OMS (Cincom France)
 - b) DCS 400 (Andersen Consulting)
 - c) Progesco (EDS-PRO)
 - d) SAP RV (SAP)
 - e) Tolas Distribution (GSI)

1.5.2 The Most Promising Segments of the French Market

Three segments of the French market show excellent prospects for development: personnel, maintenance and purchasing management.

At this time, French designers have a strong hold on the business management software market. Nevertheless, there is foreign competition, especially for management software using mainframes and wide distribution microcomputer software, particularly in project management and decision making.

1.5.3 Development Software

CASE and Data Management

In some ways, the needs of users have been adversely affected by the lack of both maturity and availability of marketing tools. Thus, there are few development tools for local network architecture.

A number of large French business users are re-examining their development tools. In response to this, IBM introduced AD/CYCLE while Hewlett Packard introduced HPCasEdge. As well, the European Portable Common Tool Environment (PCTE) standard was created to define a coherent development environment based on the CASE Workbench model. Businesses are also interested in the windows, interfaces, downsizing and multitasking environments arriving on the market.

France is well represented in the design tools area. CGI's Paclan is one of the few tools based on a uniquely designed and implemented frame of reference, managed interactively on a local network. Mega Conception (Gamma International) is a design tool that makes it possible to obtain chaining prototypes on a microcomputer workstation. Rank Xerox France has developed Graphtalk, a design data management tool accessible from a workstation. Principa from Sema Group is more advanced than English tools in methodology and document creation.

For data management, the main products on the market - database management systems (DBMS) - are American. French companies enter this market using microcomputer file management software or by developing DBMS-related utilities.

1.5.3 Hardware

Four trends characterize the hardware that supports the commercial software:

- 77% of the software sold is for microcomputers (PCs and Macs);
- 26% have at least one version that works on Unix;
- the hardware alternatives for software used by departments are IBM AS/400, DEC VAX/VMS or Unix;
- availability of software for Bull hardware is dropping, but not the availability of products developed under the Bull DPX range for Unix.

1.6 Software Protection

Under French law, software is categorized as literary and artistic property. Thus, the word *program* has no legal value. The originality of the program (or software) is the necessary and sufficient condition for its protection (act of 11 March 1957). The act of 3 July 1985 reinforces copyright protection by prohibiting private copying of programs except for a backup copy. Thus, in principle, there is no need to file an application for patenting a program with an official organization. Nevertheless, registering the program with a third party is recommended to establish the right of priority. Public organizations, such as the Agence pour la protection des programmes (APP, tel.: 19 33 1 40 35 03 03) was created for this purpose.

The European Community is also concerned with software protection and is working to standardize the copyright regulations. A recent directive authorized the reverse engineering of software, but only to obtain the information necessary to allow the program to work with other programs. This condition cannot be interpreted as a permission to copy. The practical application of this directive in the European countries involved will lead to many discussions.

All software exporters have to choose between physically exporting a copy of the product and writing locally. In either case, the document should be written in consideration of local law. The 1957 act on literary and artistic property, for example, requires a specific format for publishing contracts. Exporters should be aware of the provisions concerning rights reserved and translation rights because in France, translators may claim copyright on the translated version.

1.7 Conclusion

The market segments discussed in this study are characterized by strong technological evolution and the notable presence of imported software,

especially from North America (except in health information systems).

While French software designers remain leaders in business management and professional activity software fields, they are second in the segments under consideration. Thus, French software development is more like a cottage industry because the products are limited to the French market rather than being widely distributed. Some successes in this area, however, contradict this analysis.

1.7.1 General Recommendations for Penetrating the French Market

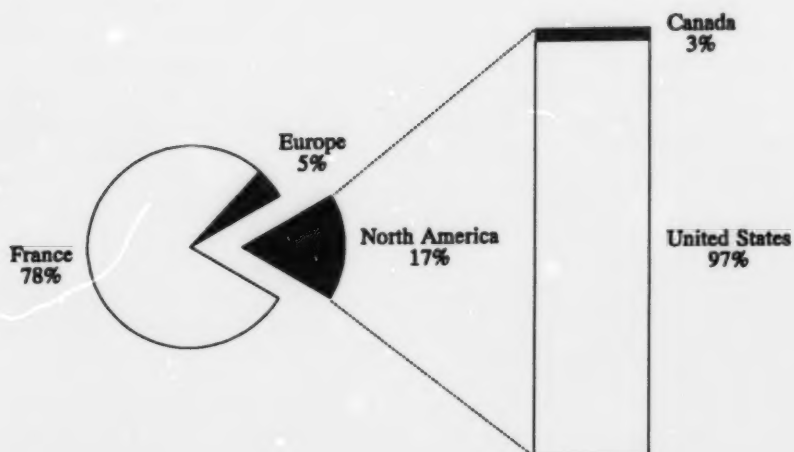
- It is no longer enough for software vendors to simply sell a product. They must include training, related maintenance and on-site implementation assistance and be more sensitive to the user's needs. Also, French users often demand specific developments that are complementary to the software.
- Small- and medium-sized businesses with fewer than 500 employees represent the best targets.

To sell to them:

- ensure easily accessible services with a network of distributors;
 - develop partnerships with other vendors and offer complementary systems;
 - offer simple methods to implement hardware and software. For some segments, the software may not have to be translated into French, but pre- and post-sale documentation must be translated;
 - make the products known to influential national and regional groups such as professional federations and technical centres; and
 - encourage well-respected users to test the software.
- Investment budgets for large businesses are tighter; consequently the quality to price ratio is becoming a fundamental choice criterion.
 - The software should function on a wide spectrum of hardware. French users prefer to be independent of their suppliers so that their applications can evolve.

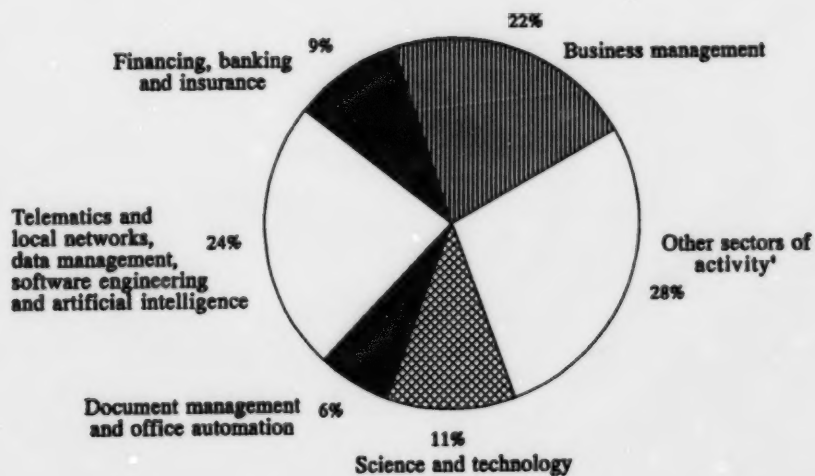
Software Sold on the French Market

Place of origin



CXP study on 11,800 products categorized by place of origin

Breakdown

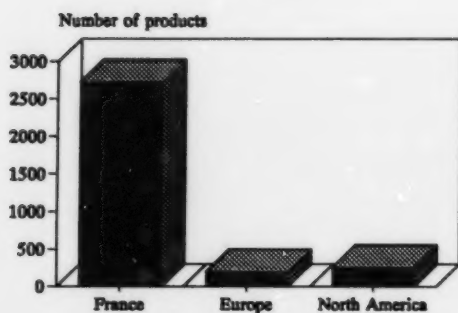


* Outside of banking and insurance

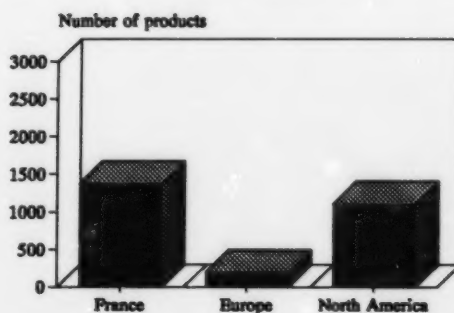
Types of Software Sold on the French Market

By Place of Origin

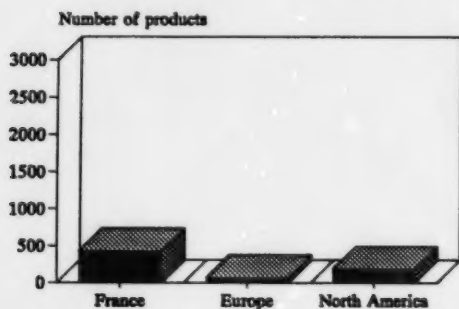
Business Management



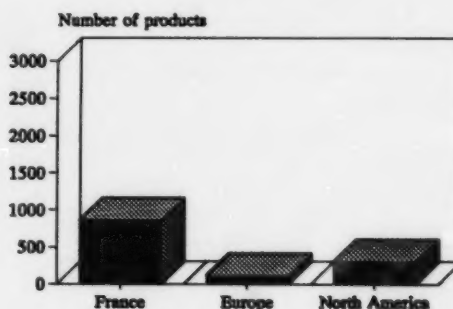
Telematics, Local Networks,
Computer Uses, Data Management,
and Software Engineering



Office Automation and Document Management

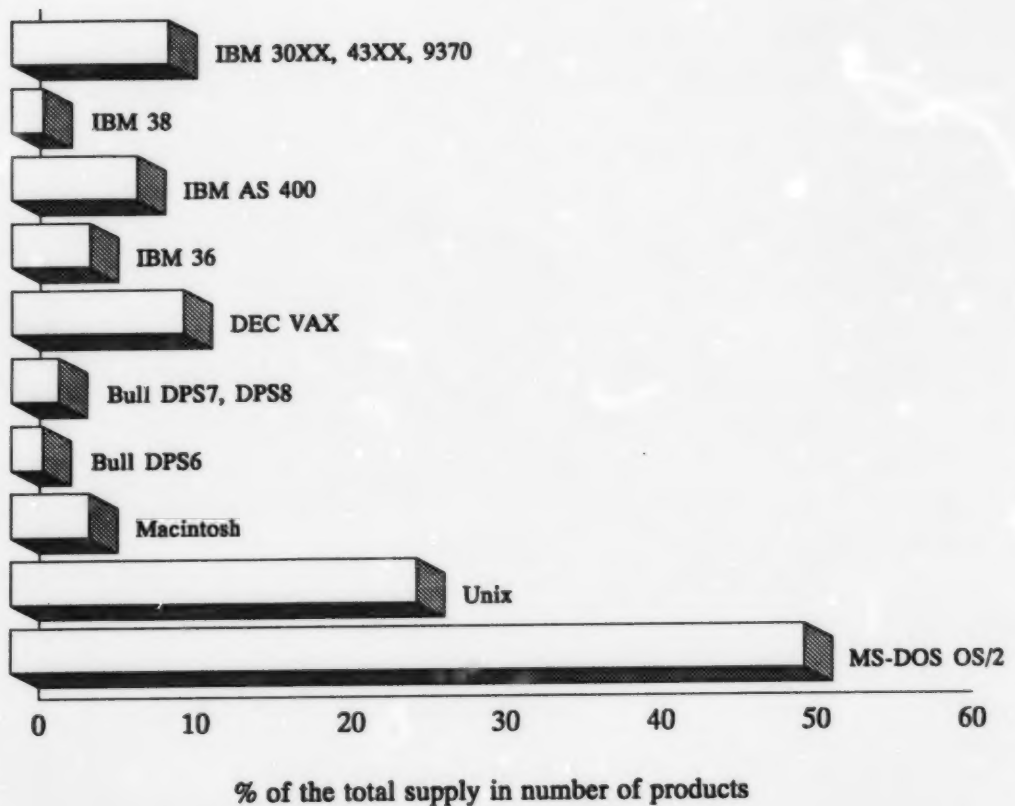


Science and Technology



Software Sold on the French Market

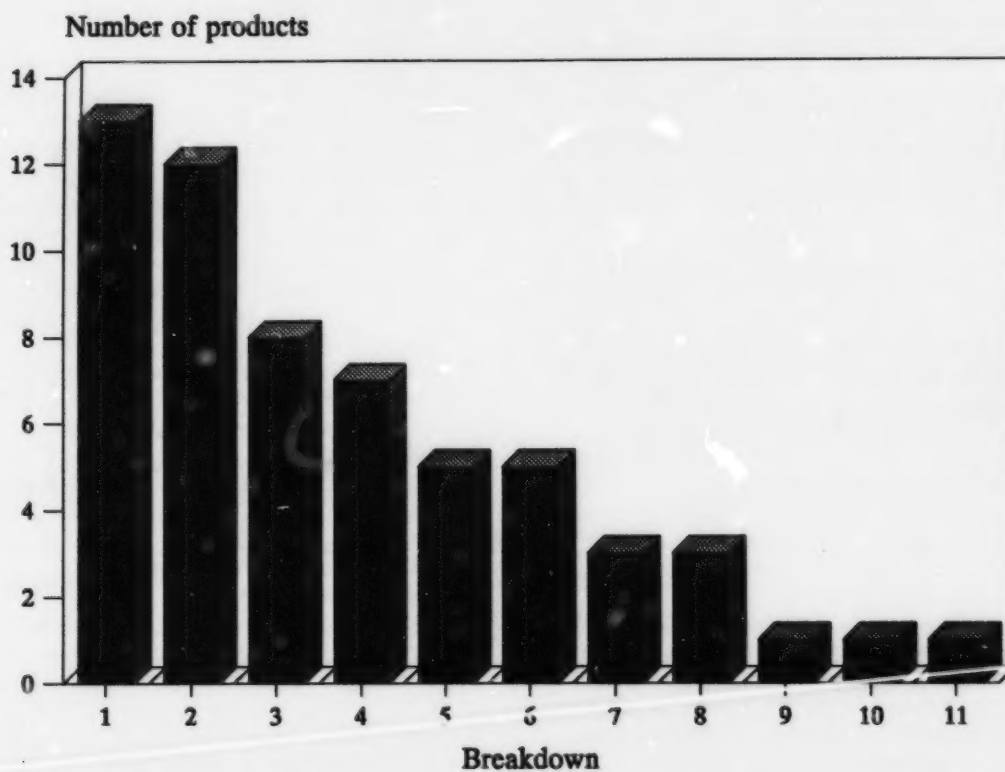
Main Types of Hardware



Canadian Software Programs on the French Market

Analysis by Segment

Analysis of 59 programs



- 1 Data management and development of applications
- 2 Office automation and document management
- 3 Sectors of activity
- 4 Computer uses
- 5 Communications – telematics
- 6 Graphics, CAD and CAM
- 7 Industrial management
- 8 Mathematics and statistics
- 9 Project management
- 10 Finance
- 11 Commercial management

2. CASE AND OBJECT-ORIENTED PROGRAMMING

2.1 Supplier Characteristics

There are 203 CASE and object-oriented programming software packages on the French market. Of these products:

- 26% are screen generators or user interface construction tools;
- 24% are CASE workbenches;
- 19% are information system or methods design tools;
- 15% are application development tools;
- 11% are object-oriented programming languages; and
- 5% are commercial data libraries independent of a DBMS.

2.2 The Foreign Presence

Half the products in this segment are North American or European (other than French). The American presence is particularly strong in the object-oriented programming languages market. France is well represented in information system design tools and CASE workbenches.

2.3 Hardware

Of the software on the French market, 70% is used on a microcomputer; 70% have mini or mainframe system versions. Many are available on a wide range of hardware. Products originally designed for mainframes can now be used on microcomputers. Also, 35% of the products work in a Unix environment effectively guaranteeing their distribution over various kinds of hardware.

It is important to note that CASE workbenches are available mainly on mini and mainframe systems.

2.4 Analysis of Market Results

2.4.1 CASE Workbenches

Computer-aided software engineering (CASE) Workbenches ensure coverage of the software's entire lifecycle.

Pacbase

Written and distributed by CGI. Pacbase is based on a COBOL code generator. Its main target machines are IBM and Bull mainframes. The data library and

code generator are on the mainframe. The Pacbase workstation is an MS-DOS microcomputer running Windows 3. The individual workstation has an Upper CASE modelling tool – Pacdesign – and a Lower CASE design tool – Pacbench. These tools access the main functions of the library and the generator. Pacdesign offers two methodological versions – Merise and SSADM.

Paclan

Written and distributed by CGI. Paclan is a new version of Pacbase. The library and the code generator are located on a local network server and the workstation is the same. The server may be a dedicated Novell server, a 386 server using the Lan Manager network, or a Unix HP machine in the Paclan/X version. Paclan and Pacbase are general solutions when a modular approach is difficult.

IEW and ADW

Written by Knowledgeware and distributed by Ernst & Young. IEW and ADW are modular CASE Workbenches sold for MS-DOS systems running GEM and OS/2 PM. ADW is replacing IEW, which will no longer evolve because of the limitations of GEM and MS-DOS. ADW is James Martin's IEM, completed by Ernst & Young under the name Navigator. IBM selected ADW within the framework of AD/Cycle. A local library allows the CASE graphic tools to manage the planning, analysis and design of an application. A module on an IBM 370 mainframe offers a central library and a COBOL code generator – Gamma. The application will be generated by Gamma after transfer to the 370 mainframe or by a third party's Lower CASE after transferring the data to the target machine.

Mega Conception

Written and distributed by Gamma International (recently purchased by Sogeti S.A. whose holdings include CAP Gemini Sogeti). This Upper CASE graphic tool offers design functions using a local library on MS-DOS Windows 3. Mega has only one methodological version – Merise – enriched by Gamma International.

A COBOL code generator with run-time has recently become available for the IBM 370 and AS/400, and Bull and DEC mainframes. Mega Realisation is still a new product. Mega is often used alone or in combination with a third-party Lower CASE on a target machine.

2.4.2 Upper CASE

Excelsator

Written and distributed by Intersolv. Excelsator is a North American Upper CASE, available in the Merise and Yourdon methodological versions on MS-DOS and OS/2 PM. It was chosen by IBM within the AD/Cycle framework. Analysis and graphic design tools make it possible to design an application in a local library.

Intersolv, recently created when Index Technology and Sage Software merged, offers their COBOL APS code generator and ports between Excelsator and various third-party design tools.

Conceptor

Written and designed by IBSI S.T. Conceptor is a French Upper CASE that implements a standard version of Merise on MS-DOS Windows 3 or Unix X-Window. IBSI sells it alone or compared with Delta, a generator designed by the Swiss firm Delta Software AG.

2.4.3 Lower CASE

Telon

Written by Pansophic, which was bought by Computer Associates. Telon is a transaction and batch compiler for IBM mainframes; it works on the principle of a non-language code generator using neither 3GL nor 4GL.

Delta

Designed by Delta Software AG and distributed by IBSI S.T. Delta is a COBOL or PL/I generator for IBM, Bull or DEC mainframes. It works on a macro-substitution principle and creates a source code that must be compiled on the target machine.

2.4.4 Object-Oriented Programming

Object-oriented programming tools on microcomputers are based on first-level languages such as C and C++. They operate as a workbench or tool box organized around a basic editor-compiler-debugger.

The main object-oriented programming tools are:

- Object-Oriented Turbo PASCAL and Turbo C++ – written and distributed by Borland;
- Object PASCAL – designed and distributed by Microsoft;
- C++ Zortech – recently purchased by Symantec and distributed by Microsigma; and
- C++ Glockenspiel – distributed by Microformatic.

These tools must be enhanced by other tools that generate graphic interface and client applications in a client-server architecture using this technology. These include:

- Easel – distributed by Microsigma; and
- Object/1 – designed by MDBS and distributed by ISE Cegos.

These environments have a larger profile on workstations. They address the domain of artificial intelligence with:

- Lelisp by ILOG;
- Spoke by Alcatel ISR;
- Y3 by Semagroup; and
- Eiffel by SFGL.

Object-oriented tools and environments have limited distribution on mainframes, such as object-oriented DBMSs, which have just become available.

2.5 Qualitative Analysis

The European CASE tools market was estimated at C\$700 million in 1991, with France holding a 17% share of this market.

The CASE tools market is growing rapidly both in France and internationally. Mergers and buyouts of companies bring products into wider areas:

- Excelsator brought to Intersolv by Index;
- Design Aid bought by CGI with Transform Logic;
- Mega and Gamma taken over by CAP Gemini Sogeti; and
- Pansophic and Telon purchased by Computer Associates.

Alliances between suppliers through exclusive distribution contracts and other arrangements predispose these groupings. For example, Software AG has taken over distribution of Message by Cecima, and Pansophic that of Nat System Development Toolkit. As a result of these regroupings, some products will eventually disappear.

The cost of developing CASE tools is very high. Consequently products and suppliers will become concentrated, as are ADW from Ernst and Young, or – like Bachman – will offer superior services.

Business users have not yet bought CASE tools widely. Their prudence is motivated by:

- the lack of integration of products around clear standards;
- the complexity of implementing these tools; and

- the advanced skills required to install and use them.

These tools are used only when they are indispensable such as in the construction of graphic interfaces or as integrated elements in an application.

The IBM AD/Cycle and the European PCTE standard may influence the CASE tools market when machine manufacturers and software suppliers can support their distribution.

2.6 Information and Promotion Sources

Exhibitions:

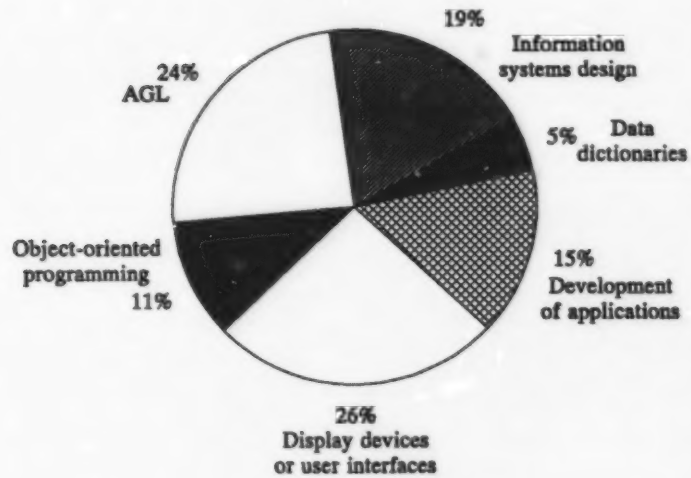
- Software Development
Exhibitions and conferences on development software
15, 16, 17 October 1991, Paris

- Grand Sicob
International Exhibition of Informatics, Telematics, Communications and Office Planning and Automation Systems
5 to 9 October 1992; 4 to 8 October 1993; 3 to 7 October 1994, Paris
- FIT
Informatics and Telecommunications Forum
1 to 4 October 1991, Paris
- European PC Forum
European microcomputers forum
11 to 14 February 1992, Paris

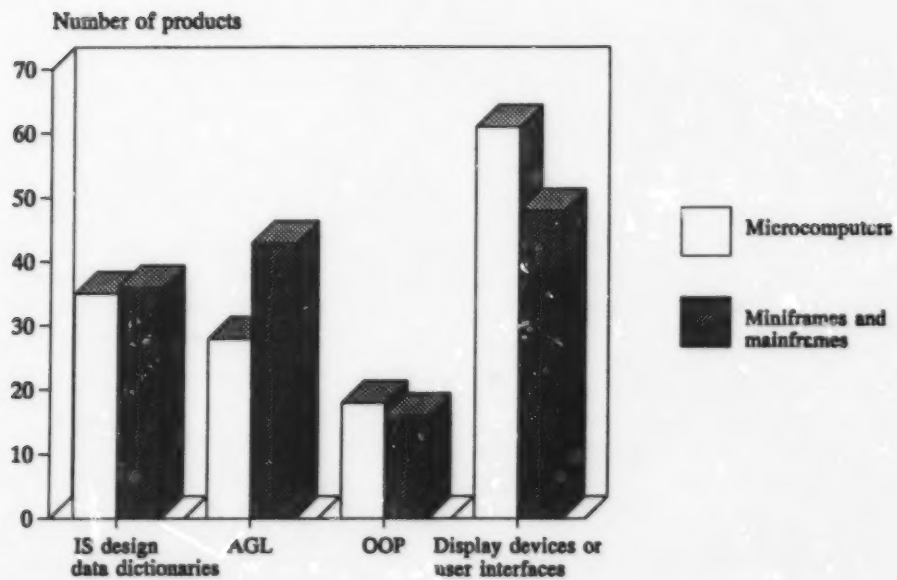
Software Engineering and OOP

Breakdown

(% of the total number of programs in each sector)



Hardware



3. 4TH-GENERATION LANGUAGES AND DATA BASE MANAGEMENT SYSTEMS

3.1 Marketplace Characteristics

There are 391 4GLs and DBMSs on the French market (18% between them).

DBMS cannot be studied separately from 4GLs. DBMS suppliers compete fiercely to provide an integrated group of utilities to allow rapid production of computer applications in addition to being a data management tool. At the same time, a 4GL builds in at least one data management system.

3.2 The Foreign Presence

This segment of the market is characterized by a strong North American presence - 56% of the products sold in France were developed in the United States or Canada. Most of the fundamental DBMS products are American. Worldwide publishers of these programs have French subsidiaries.

3.3 Hardware

Two-thirds of 4GLs and DBMSs work on microcomputers, 44% on minis, 28% on

mainframes and 35% are available on at least one Unix platform. These figures demonstrate that these products can function on a wide range of hardware.

3.4 Analysis of Market Results

This section groups the main development environments for DBMS and 4GL combinations in according to the hardware used.

3.4.1 Mainframes

The major DBMSs for mainframes are based on the relational model. Table 3.1 shows the DBMSs most used in France.

The DBMSs listed above are sold with a group of data base or application development interrogation tools. Some 4GLs require the presence of a run-time modules to operate the applications developed (see Table 3.2).

3.4.2 Minicomputers

The major players on the French market in the microcomputer DBMS field are shown in Table 3.3.

Table 3.1

Name	Designer	French Distributor	Environments	Data Model
Adabas	Software AG	Software AG France	IBM MVS, VM, IBM DOS/VSE, DEC VAX/VMS	UNI/Relation Type
Datacom/DB	ADR	Computer Associates	IBM MVS, VM, IBM DOS/VSE, DEC VAX/VMS and Unix	Relational
DB2 and SQL/DB	IBM	IBM France	IBM MVS for DB2 IBM DOS/VSE, VM for SQL/DS	Relational
Oracle	Oracle	Oracle France	IBM MVS, VM, IBM DOS/VSE	Relational
Supra	Cincom Systems Inc.	Cincom Systems France	IBM MVS, VM, IBM DOS/VSE	Relational

Table 3.2

Name	Name of the 4GL	4GL Compile	Generators
Adabas	Natural	Possible	Built-In
Datacom/DB	Ideal	Yes	Built-In
DB2 and SQL/DB	CSP	ME CSP/AE	Built into CSP/AD
Oracle	SQL*Forms	Yes	SQL*Report Writer
Supra	Mantis	Yes	Built-In

Table 3.3

Name	Designer	French Distributor	Environments	Data Model
Informix	Informix USA	Informix France	Unix	Relational
Ingres	RTI	Ingres France	Unix, VMS, VM	Relational
Oracle	Oracle	Oracle France	Unix	Relational
Sybase	Progress Corp.	Progress Software FRANCE	Unix, VMS	Relational
RDB	DEC	DEC France	VAX VMS	Relational
Unify	Unify Corp.	Oriane France	Unix	Relational

Table 3.4

DBMS	Name of the 4GL	4GL Compiler	Generators
Informix	Informix-4GL	Pseudo compiled code	Built-In
Ingres	Windows/4GL	Yes	Built-In
Oracle	SQL*Forms	Yes	SQL*Report Writer
Progress	Progress 4GL		Built-In
Sybase	Apt-Workbench	No	Built Into Apt-Edit

There are no real 4GLs for the RDB DBMS (by Digital for VAX machines running VMS) and Unify (by Unify Corp. for machines running Unix) (see Table 3.4).

3.4.3 Microcomputers

Many data management tools are available for microcomputers. Most of them are real development environments built around a DBMS. The principal ones are:

- 4D for Macintosh, developed by Laurent Ribardi re and distributed by ACI, is a complete applications development environment;
- Paradox by Borland works with DOS and OS/2 and is a relational DBMS integrating a QBE and various utilities;
- dBaseIV by Ashton Tate, distributed by La Commande  lectronique, is a relational DBMS that works with DOS and integrates a programming language (dBase);
- Foxpro by Fox Software is distributed by AB Soft and is a relational DBMS for DOS microcomputers. It integrally supports the dBase language and integrates a WYSTWYG applications development tool;
- rBase, developed by Microrim and distributed by Frame, works with DOS and OS/2. It is an

applications development tool based on a relational DBMS.

3.5 Qualitative Analysis

Almost all DBMSs use the relational model. There are many advantages to relational technology: for example data and processing independence, security and confidentiality of data.

Similarly, Structured Query Language (SQL) is becoming a standard for data definition and handling. In 1989, the SQL standard was improved and renamed SQL 2 by ISO taking into account relation integrity restrictions. SQL 2 is still not perfect but has no competition at this time.

RDBMS that are capable of managing complex data or binary objects like text and images are rare. Business needs will nevertheless move in this direction with the boom of multimedia.

The area of computer applications architecture, is affected by organizational changes taking place in business. Thus, more DBMSs are on the market. These usually offer only access to widespread data bases in the form of consulting. Updating widespread data bases requires the implementation of rival access complex management protocols available only in some DBMS products.

Data servers working in a client-server and local network and in SQL servers (widespread DBMS in particular) were introduced only in the early 1990s. Products such as the SQL Server by Sybase Ingres and SQL Base by Gupta Technologies should be popular with businesses in the years to come.

Increasingly, businesses will want applications that allow access to data in various DBMSs even on different hardware. In anticipation of this, DBMS suppliers are providing gateways between their software and other data management systems.

The 4GLs and large DBMSs have been evolving into more flexible, user-friendly languages. Other types of hardware have progressively integrated graphic interfaces (X-Window, Windows, etc.) into the applications produced. DBMS and 4GL suppliers are also concerned about programmer productivity and the portability of the applications produced.

As application development tools using DBMS data, object-oriented 4GLs are well-suited to producing applications in a graphic environment. Of these tools that are now available on the market, more can perform this function; however, neither business nor suppliers are ready for the mainframe market.

3.6 Sources of Information and Promotion

Exhibitions:

- Software Development
Exhibitions and conferences on development software
15, 16, 17 October 1991, Paris
- Grand Sicob
International Exhibition of Informatics, Telematics, Communications and Office Planning and Automation Systems
5 to 9 October 1992; 4 to 8 October 1993; 3 to 7 October 1994, Paris
- FIT
Informatics and Telecommunications Forum
1 to 4 October 1991, Paris
- European PC Forum
European microcomputers forum
11 to 14 February 1992, Paris

4. GEOGRAPHIC INFORMATION SYSTEMS

4.1 Supplier Characteristics

About 50 geographic information system (GIS) software packages are sold in France.

A GIS is a data base management system for spatial data. It is aimed at local communities, planning and study organizations, movers, energy distribution companies and cartographers, who rely on organized geographic data.

It is very difficult to classify these products. The supply on the French market varies widely in the areas covered and the target users. Furthermore, the commercial definition of the products also varies:

- GIS;
- urban data bases;
- analytical and geographic representation products;
- cartographic and topographic data management;
- graphic information management systems; and
- spatial reference data management.

These definitions do not always reflect the limitations of the products. Some may be real GIS packages, while others are closer to statistical cartography or CAD/CAM.

4.2 The Foreign Presence

The American presence is very strong in this area; 36% of the software sold in France was developed in the United States.

4.3 Hardware

Fifty-eight per cent of GIS software works on mini or mainframe systems. Originally, GIS packages required large environments. Today they are available for the smaller systems used by some communities. Thus, 46% of the software already includes a version for Unix (about half on Sun workstations). The product leaders have versions available for use with micro and minicomputers, workstations and mainframe systems.

4.4 Cost of Licensing

Software licensing costs are fairly low relative to the total cost of installing a GIS. For example, we estimate that data entry for a department costs about C\$6 million.

4.5 Analysis of Market Results

The main suppliers of GIS products for the French market are listed in Table 4.1.

4.6 Qualitative Analysis

4.6.1 New Entrants

In 1988, it was estimated that the French GIS market, which has grown at a rate comparable to that in North America, would reach C\$60 million by 1991. Other than the development of engineering companies and high-level consultancies based on GIS, English consulting firms should develop skills in the subject matter (something that is already being done in Germany and the United Kingdom).

4.6.2 The GIS Market for Communities

GIS software was at one time used primarily by public sector services such as defence. Because GIS data are now more affordable, small and medium-sized businesses and communities now use GIS software to manage data relating to lot management, land use, water, gas and electricity networks, urban development, and emergency management.

At the end of 1990, 80 French communities were equipped with GIS, and a 50% increase is expected by the end of 1993. Today, many medium-sized towns and some urban communities have operational urban data banks (UDB). The decentralization that has taken place since 1982 has accelerated the development of the UDB market from the town to the department, and even to the regional level. Demand will multiply, from both private and public users.

4.6.3 New Applications

There are many potential applications for GIS. GIS can maximize the data collected by satellite imaging. In the future GIS will be used in geomarketing to follow up on commercial results for decision-making systems such as Executive Interactive System (EIS) or spreadsheets.

The GIS market is underdeveloped in sectors with small budgets – engineer's offices, surveyors, technical offices. They also need products that teach GIS methods. And they need access to

Table 4.1

Supplier	Software	Comments
BRGM	SynerGIS	SynerGIS including ARC/INFO of ESRI
Cartogrammie	CARTHAGOSIG	There are many specialized versions – local communities, drug stores, etc.
ESRI/France	ARC/INFO PC ARC/INFO	French affiliate of the world GIS leader. They have opened 100 outlets in two and a half years.
Eurecart	APIC	Distributes the products of the French company Polilog
Géomatique	Infocad	
Groupe Clemessy	Geocity	
ICOREM	CARINE II	Mixed company subsidized by the City of Marseille
Intergraph	MGA	
ITI	PREFIX THEMAP	
PAFEC	PAFEC GIS	
Prime Computervision	Système 9	
PROSYS	GEO/SQL	Aimed at agencies that manage a territory
Siemens Nixdorf	SICAD DIGSY	250 users of geographic and cartographic applications in Europe DIGSY is a GIS aimed at local communities
Telinfo Integrated Systems	GIMS	Product developed by the company Digigroup, for European distribution
Uniware	Atlas-GIS Atlas Graphics	French distributor of software produced by the American company Strategic Mapping

methods, for example cartography, that are currently limited to large computerized facilities.

Service is essential to the GIS market. Some companies provide land improvement and space and real-estate management services and have developed skills in GIS installation and related engineering services.

4.6.4 Standardization

The French Standards Association, AFNOR, accredited a format pre-standard for the exchange of digital geographic data (EDIGEO) in France. Although still experimental, EDIGEO is really a French translation of the DIGEST standard that was established by 10 countries. No European standards exist.

4.7 Sources of Information and Promotion

Exhibitions:

- MICAD 92
11 to 14 February 1992, Paris
- CARTAO
11 to 14 February 1992, Paris
- SIG-GIS Europe 92
17 to 20 March 1992, Paris
- MARI
Exhibition and conferences on digital geographic information
1 to 3 April 1992, Paris
- Informatics and Local Communities
National meetings dealing with local geographic information and urban data bases
22 to 24 October 1991, Paris

5. GRAPHICS AND IMAGE PROCESSING SOFTWARE

5.1 Supplier Characteristics

More than 400 graphics and CAD programs are available on the French market:

- 25% are computer-assisted graphics programs;
- 48% are computer assisted design (CAD) programs
 - 15% general, and
 - 33% dedicated to a specific activity such as mechanics, buildings, electricity or electronics;
- 10% are image-processing programs; and
- 17% are graphic display or graphics utility programs.

5.2 The Foreign Presence

French and American software share the market equally.

5.3 Hardware

An analysis of hardware and software revealed:

- a strong presence of microcomputers, regardless of the function under consideration;
- a marked presence of mini and mainframe systems in CAD; and
- at least one Unix version in 27% of the software.

Sun, Hewlett-Packard/Apollo, Intergraph, Prime Computervision and DEC control the graphics market for CAD/CAM and engineering. Silicongraphics workstations are the basic hardware that support image-creation and processing software.

5.4 Analysis of Market Results

5.4.1 Graphics and CAD

The main suppliers to the French market for:

- Microcomputers (vendor followed by name of software)
 - Autodesk (AUTOCAD)
 - Cadkey (CADKEY)
 - Topcad (TOPCAD)
- Work stations, minicomputers and mainframes (vendor followed by name of software)
 - Ferranti International (Mazurca)
 - Cisigraph (Strim 100)

- Prime Computervision (CADDs 4X, Medusa)
- IBM (CATIA)
- McDonnell Douglas (Unigraphics II)
- Matra Datavision (Euclid-IS)
- Syseca (Dameca)
- SDRC (I-DEAS)
- Pafec (Dogs)
- Schlumberger (Bravo 3)
- Intergraph (Intergraph)

- Building applications (vendor followed by name of software)
 - Gimeor (ARCHITRION)
 - Batisoft (PC-BAT)
 - Keeps (Keops)
- Electricity applications
 - Assigraph
 - IGE
 - XAO-Industrie

5.4.2 Image Creation and Processing

Thomson Digital Image (TDI) is a world leader in image creation and processing. Its product Explore covers all the needs of image production for audiovisual, industrial and technical markets. Its main competitors are the companies Alias (Canadian) and Wavefront (American) which have subsidiaries in France. In 1990, TDI sold 350 versions of its product world-wide; more than 80 in France alone. Today, TDI is developing a partnership policy with IBM; Explore is already interfaced with Getris Images' Venice palette.

5.5 Qualitative Analysis

5.5.1 Graphics and CAD

In 1989, the French graphics and CAD market amounted to C\$0.8 million. Manufacturers made 44.5% of these sales, vendors and VARs the other 55.5%.

The mechanical sector represents 50% of the French graphics and CAD market. Electricity and electronics account for 29.5%. The French construction and public works sectors, still lagging in the use of computers, represent a pool of future potential users.

Small- and medium-sized French companies are currently looking for immediately operational and integrated solutions. They also want a single

supplier for their equipment, software and related services, such as assistance and training. Furthermore, being able to supply the product and related documentation in French is an important advantage. There is not much room for new entries into the mechanical market because competition is fierce. The world leaders are very strong and there are very well positioned local companies. The French market is still open to specific business-oriented products and applications.

5.5.2 Image Creation and Processing

Image processing was limited to the audiovisual sector for a long time. Subsequently, it entered other sectors as a CAD tool. As hardware costs have dropped, image processing is more widely used.

Currently, users demand:

- combined 2D and 3D display;
- integrated systems – workbenches including peripherals;
- complete product support; and
- interfacing with CAD, especially in architecture.

5.6 Sources of Information and Promotion

Exhibitions:

- **IMAGICAD**
Exhibition on computer imaging and CAD
8 to 10 October 1991, Lyon

- **Imagina**
International forum on image processing and special effects
29, 30 and 31 January 1992, Monte Carlo (Monaco)
- **MICAD 92**
International conference on CAD/CAM and infographics
11 to 14 February 1992, Paris
- **Intergraphic**
Graphics communications exhibition
12 to 14 February 1992, Paris
- **Parigraph**
International market of image processing equipment and software
Next edition: 1992 (date has not yet been set)

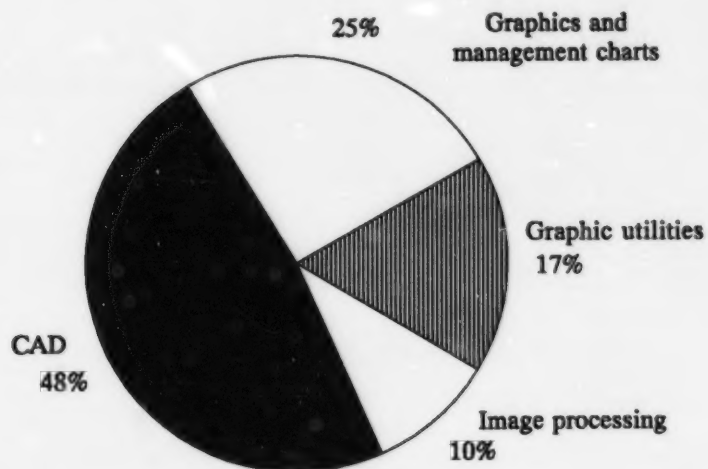
Organizations and associations:

- **ADEPA (CIM)**
- **AFRI (ROBOTICS)**
- **MICADO (CAD/CAM)**
- **UNSFA (architects)**
- **Technical centres (for example, CETIM for mechanics)**

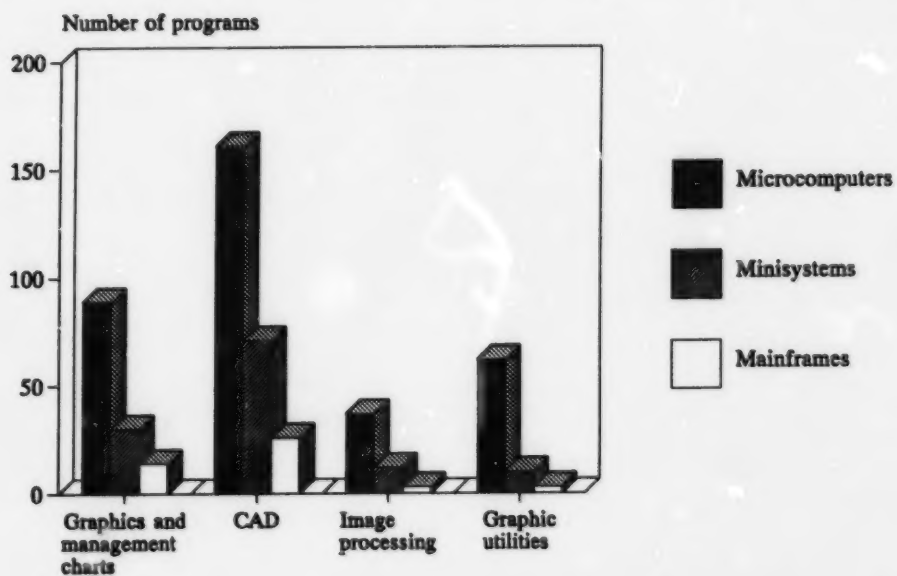
Graphics Programs and Image Processing

Breakdown

(% of the total number of programs in the sector)



Hardware



6. COMMUNICATIONS AND NETWORKING APPLICATIONS

6.1 Supplier Characteristics

There are 472 communications and networking software packages on the French market.

- 21% of these products are terminal emulation programs, usually accompanied by file transfer functions; and
- 19% are local network packages and related tools, such as gateways and communication pathways.

The other categories that fall within the framework of this study are:

- single file transfer programs, which most often use asynchronous transmission;
- telecommunications and teledistribution programs that automate data transfer;
- telemaintenance and telemonitoring programs; and
- sophisticated data exchange programs.

6.2 The Foreign Presence

Approximately 48% of the software sold in this segment comes from the United States. French products make up 45% of the market. Five Canadian products are on the market.

The French predominate in single-file transfer programs, telecommunications and telemaintenance software. American products dominate in high-end communications and local network systems.

6.3 Hardware

Of the software on the French market, 88% is intended for microcomputers. Only 21% work on mainframes. There is less (25%) software available for use with Unix than with other segments of the market.

6.4 Licensing Costs

Some of the trends in the market are:

- 48% of the communications and local network software packages have licensing costs under C\$1,000; and
- 13% have licensing costs over C\$10,000.

6.5 Market Analysis

6.5.1 File Transfer

Heterogenous file transfer programs lead the market; however, because they are older, they are not based on any file transfer standards. CFT by Credintrans, Pelican by Netsys, and Relay by Europe Informatique fall in this category.

Along with market development for sector standards, such as ETEBAC standards for bank-client exchanges, there is growing interest in FTAM file transfer. The main suppliers are:

- major manufacturers:
 - IBM with OSI/File Services, AIX OSI Messaging and Filing/6000 and LNS/370, and
 - HP with HP FTAM, Bull, DEC and Unisys;
- major software companies:
 - Sema Group with Key-File and ACSE; and
- specialized companies:
 - Marben with AISAM_C FTAM and TFU.

6.5.2 Emulators

This is a vast market with many types of emulators. Therefore, precise information is not available. Major suppliers dominate this market as well.

6.5.3 Telecommunications and Teledistribution

These programs deal with automatic and undisguised file transfer. The French telecommunications standard, as defined by France Télécom, is Spécifications techniques d'utilisation du télé échange de logiciels (STUTEL)—(Technical specifications for the use of software telecommunications).

This is a limited market without a real leader. The main programs are:

- Diane for AS/400 by IBM;
- Information-Link for Bull GCOS7 by Bull;
- ISAI for IBM/370 by Fairware;
- Microcharge for IBM/370 by Triel (conforms with STUTEL);
- Netview DM for IBM/370 by IBM;
- SCI TED for IBM/370 by GFI; and
- STUTEL Softec for IBM/370 by Softec (conforms with STUTEL).

6.5.4 High-Level Data Exchange

This software enables high-level exchanges between computers. The file transfer function, however, is only one of the abilities of these products. Most operate on the virtual disk concept, that is, they consider one or more units of a central computer as one or more supplementary floppy disks.

Answer Link is unquestionably the leader in the IBM market. Sterling Software took over from the program's long-time distributor, Microformatic, in France and in other countries. However, in Canada its design company, Micro-Tempus, handles distribution.

Answer Link has prompted the development of Tempus Link and Panlink (the latter sold by Pansophic). Other programs in this category are:

- Arbiter and its new version Peer Services designed and developed by Tangram;
- DT7 by Bull, for use specifically with Bull products;
- ECF, manufacturer's product by IBM;
- Mercure by CDFI, for use specifically with Bull products;
- PC/Mainframe designed by CF Software and distributed in France by Technologies;
- Primelink by PRIME for use specifically with Prime products;
- The Corporate Tie, developed and distributed by Pansophic.

6.5.5 Local Networks

The local network market represents one of the main stakes in communications.

The market leader is NetWare by Novell which holds 55% to 60% of the network OS market in France. This translates into 35,000 licences or 400,000 users. Because Novell has only recently started to operate in France, these figures are slightly lower than the company's figures on the world market, particularly the North American market.

NetWare's chief competitor is LAN Manager by Microsoft. This program holds about 30% of the market share including the old 3+Open by 3Com.

Two other programs worth mentioning are LAN Server by IBM and Vines by Banyan. LAN Server has a very small percentage of the French and world markets. Vines, however, holds about 4% of the world market, while in France there are about 60 licences for this OS network. Banyan has no direct presence in France. Until now, Vines has

been sold exclusively by Infograph, which was recently bought out by Steria and thus absorbed into LAN Partner. Now there is reason to believe that Banyan France will be created in 1992 strengthening its position.

6.6 Qualitative Analysis

With a few exceptions the French communications market is almost two years behind Canada's. This is because French companies are hesitant when dealing with new technologies – networks have had effects throughout their organizations. Nevertheless, more than 50% of the microcomputers in France have already been connected.

Software has been developed based on proprietary or sector communications protocols in the absence of final Open Systems Interface (OSI) standards. But now the major French accounts are demanding that standards be systematically taken into account and finalized.

At present some communications and networks sectors are tightly sealed either by the market itself, as is Novell as "king of the hill" of network OS, or by the monopoly that France Télécom holds on national or regional networks. Despite the deregulation of telecommunications, France Télécom is holding its protected position in the public networks, and generally on all the basic networks (e.g., telephone, integrated services digital network).

The only open areas in telecommunications are the sectors connected to radio communications, electronic data interchange (EDI) and Value-Added Networks and very small aperture terminals (VSAT), which is still quite new.

There are two network areas where no products have made significant in-roads. The administration of heterogeneous networks is a main concern of the large companies. Most of the solutions are currently based on SNMP, and thus closely linked to the Unix world. The introduction of the ISO CMIP/CMIS standard opens up new possibilities.

Another area is interconnecting local networks – EtherNet and Token-Ring, in particular. The popular solution in France is undoubtedly Fibre-Distributed Data Interface (FDDI) whose primary suppliers are Fibronique (a subsidiary of Fibronics), Cisco and Experdata (a French company).

Videotext, a French development, evolved from two technological developments – multi-media

(photographic minitel) and telebanking, which strengthens its professional use.

6.6.1 Current Trends

- Greater acceptance of standards (FTAM, X.400, X.500, CMIP/CMIS);
- the development of radio-communications (especially cellular telephone);
- the arrival of high rate networks – FDDI, Distributed Queue Dual Bus (DQDB) and ATM; and
- the new growth of videotext and the parallel development of audiotext.

Certain basic rules must be followed to enter the French market:

- Take the standards into account. The users demand it.
- Be aware of the market's maturity in relation to a technique. This often takes a bit longer in France than in Canada.
- Do not attempt a frontal attack on France Télécom's monopoly on basic networks. Try to take advantage of it by taking it into consideration.
- Do not take videotext for granted. This is an interesting loophole; France is a leader, not only technologically but also in terms of attitude and market maturity.

- Do not be content with merely offering a product. Accompany it with impeccable service. This point applies to all communications sectors.

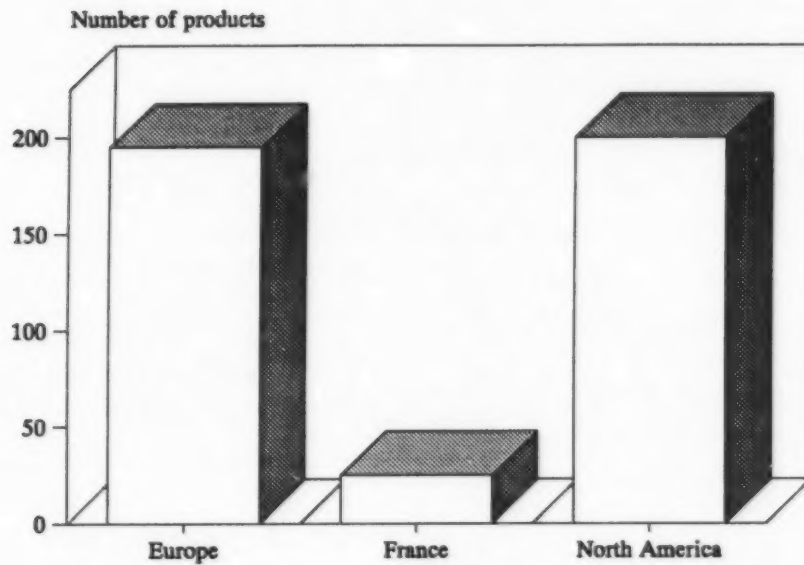
6.7 Sources of Information and Promotion

Exhibitions:

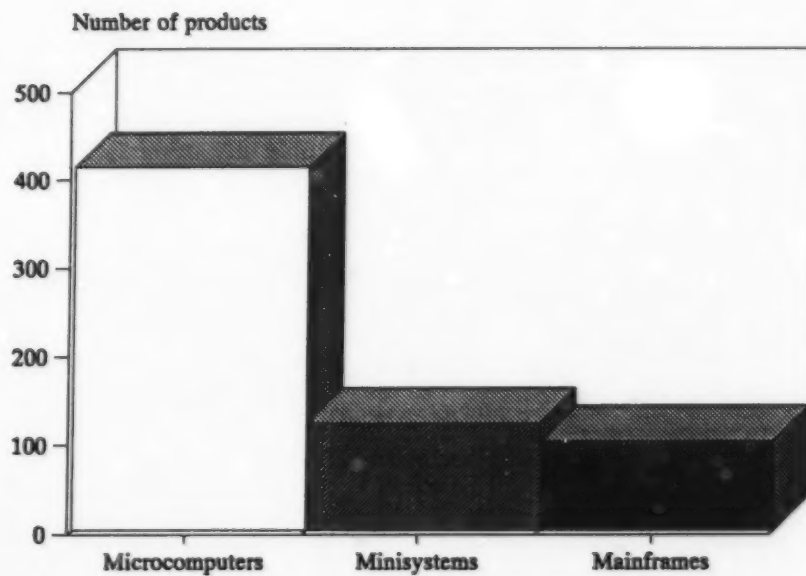
- Software Development
Exhibitions and conferences on development software
15, 16 and 17 October 1991, Paris
- Grand Sicob
International exhibition of informatics, telematics, communications and office planning and automation systems
5 to 9 October 1992, 4 to 8 October 1993, 3 to 7 October 1994; Paris
- FIT
Informatics and telecommunications forum
1 to 4 October 1991, Paris
- European PC Forum
European microcomputers forum
11 to 14 February 1992, Paris
- Telecom Network '92
International networks and telecommunications exhibition
11 to 14 February 1992, Paris

Communications and Network Applications

Designers by place of origin



Hardware



7. UTILITIES

7.1 Supplier Characteristics

Almost 800 utility and computer exploitation programs are sold on the French market. These products cover the areas of automation, computer telemonitoring systems and performance management. This segment also covers file management utilities.

7.2 The Foreign Presence

In this segment, 50% of the products are imported, usually from North America or Europe.

7.3 Hardware

Until now, medium-sized and large IBM (MVS, VSE and VM) and Bull systems held a 79% share of the French computer exploitation and utilities software market, 68% of which is for IBM environments. The market for DEC VMS, IBM OS400 and Unix has been almost marginal, representing barely 8% of the overall supply in 1990. In 1991, the supply almost doubled but was still very small. The rest of the market has not yet been conquered.

7.4 Market Analysis

7.4.1 Automation of Exploitation

The leaders in batch production software for the IBM/VMS environment are OPC/A (IBM), CA-7 and CA-Scheduler (Computer Associates). However, there is a growing market for Control-M (Boole & Babbage) and Jobtrac (Goal Systems). The major products for the Bull environment are Enterprise (Genlog) and Orion (Sigle Informatique).

In console automation, where supply and demand are more recent, the market is divided. Although it is difficult to identify the leaders, these products stand out:

- CA-Opera (Computer Associates);
- AF/Operator (Candle);
- MVS Autooperator (Boole & Babbage);
- Automate MVS (Legent); and
- SYS/Master (Systems Center).

7.4.2 Telemonitoring of Computer Systems

Computer telemarketing systems involve the automatic surveillance of computer centres and alerting the appropriate personnel by telephone, alphapage or eurosinal.

Microcomputer software performs these functions. In this segment, French software accounts for 75% of the market.

It is currently a very active market. No product leaders can be identified. Notable products are AF/Remote (Candle), Automate/XC (Legent), CA-Opera/PC (Computer Associates), Elan (Boole & Babbage), and products from smaller, French companies such as ASO Orchestra (Systar), SOS2 (Genlog), RCX (Commit), Vigipass (Bull-Scat).

7.4.3 File Management Utilities

File management utilities on the market include:

- backup and restoration;
- allocation control; and
- disk optimization by compression or reorganization of file location.

Many utilities for large- and medium-sized IBM systems manage VSAM files. The main suppliers are Macro4 and Goal Systems.

New products are appearing to improve SMS – the new IBM file management system Sterling Software and Legent have products in this area but there is no clear leader.

Tape managers have been used at major computer sites for a long time. The product leaders in the MVS environment are CA-TLMS and CA-1 (which is now available for the VMS environment).

7.4.4 Performance Management

This is the oldest segment of the market. It has experienced increased activity because of greater user interest and the introduction of new utilities.

The main suppliers for IBM are:

- Candle;
- Boole & Babbage;
- Goal Systems;
- Legent; and
- Landmark Systems (distributed in France by Technologies Systems).

In the Unisys and Bull environments, the French company Systar started to supply its products for use with IBM/MVS a year ago.

Data base optimization utilities have appeared in the past few years. Most of these products involve DB2. The recognized leaders in performance management are:

- Candle;
- Boole & Babbage;
- Goal Systems; and
- Landmark Systems.

BMC Software and Platinum, distributed in France by Krystal Software, has created a new market.

7.4.5 Security

The software leaders in access security in the IBM environment are RACF (IBM), CA-Top Secret and CA-ACF2 (Computer Associates). The undoubted leader in the Bull GCOS7 environment is Secur'Access (Bull).

7.5 Qualitative Analysis

Unix utilities will be successful particularly in exploitation automation and access security programs, as well as a proprietary system compatible with Unix. This segment of the market is quite open.

Telemonitoring is a new field offering many possibilities, even for small companies. Some of them have already had major successes. Commit, for example, distributes RCX. This is one of the most open areas of computer exploitation today. Many users are looking for solutions that allow simultaneous monitoring of multi-source environments and combine logical monitoring of the systems with control of the physical environment.

Batch job planning and tape management are new market areas where some product leaders are comfortably installed, characterized by a need for renewal and the beginning of new openings in these segments.

Today's computer utilities users are concerned with:

- the ergonomics and friendliness of the tools, which have been very technical and complex;
- their capacity to communicate among themselves and form a coherent whole; and
- their conformity to the emerging standards – SAA for IBM, Windows for microcomputer software.

7.6 Sources of Information and Promotion

Exhibitions:

- Software Development
Exhibitions and conferences on development software
15, 16, 17 October 1991, Paris
- Grand Sicob
International exhibition of informatics, telematics, communications and office planning and automation systems
5 to 9 October 1992, 4 to 8 October 1993, 3 to 7 October 1994; Paris
- FIT
Informatics and telecommunications forum
1 to 4 October 1991, Paris
- European PC Forum
European microcomputers forum
11 to 14 February 1992, Paris

8. HEALTH INFORMATION SYSTEMS

8.1 Supplier Characteristics

In health information systems, 442 software packages are sold on the French market:

- 61% are used for hospital and private clinic management and carry out at least one of these functions:
 - administrative management of patients;
 - personnel management;
 - financial management;
 - medical services management; and
 - medical file and care units management;
- 32% are designed for medical offices – doctors and dentists – although there are specialized programs for physiotherapists, nurses and other medical specialties; and
- 7% are for expert systems and medical imaging systems that help in medical practice and diagnosis.

8.2 The Foreign Presence

With a few exceptions, all the software is French.

8.3 Hardware

Microcomputers predominate in medical offices and diagnostic aids.

In hospital management, the market is evenly divided between microcomputers, minicomputers and mainframe systems, depending on the operations covered. Mainframes are used by large and medium-sized hospitals (CHR). Mini-systems are used in medium-sized hospitals and clinics, and in departmental applications such as care unit and technical services management.

An analysis of the hardware supported by the software revealed three characteristics:

- Bull and IBM are the two manufacturers most software developers favour;
- 58% of the products offered had at least one Unix version because the hospital sector is particularly interested in open systems;
- Apple has a major share in the health sector especially among doctors.

8.4 Licensing Fees

Some general market trends:

- licensing fees for hospital management software are very high;
- 33% cost more than C\$10,000;
- 15% more than C\$20,000; and
- 67% of the medical office management software and 60% of the software used in medical practice costs less than C\$5,000.

8.5 Market Analysis

8.5.1 Hospital Management

One hundred and nineteen distributors sell hospital and clinic management software.

The following companies have products installed in more than 100 sites:

CEGI	IST
CHR Emtz Thionville	Kalamazoo
CNEH	PRisme
CRIH Centre	Pyrenees Informatique
CRIH Reims	SEPI COM
DIS	Siemens Nixdorf
Groupement Opus	Sir Poitou Charentes

Table 8.1 lists products that have been installed in more than 200 sites, including mini- mainframe, and micro-systems.

8.5.2 Medical Offices

Ninety-eight distributors sell medical or paramedical office management software.

These companies sell software that has been installed in more than 250 sites:

Distal	Microconcept
Olivetti Office	SA Solutions
Prokov Editions	LOGI 27
Edig Informatique	Synthèse Informatique
Sima Software	Syspeo
Santé Promotions Service	CRIP
Status Informatique	Églantine Informatique
Saima Perisoft	Ardion

Table 8.1

Supplier	Uses	Software
CEGI	Management of medical and social services centres	PIMS
Kalamazoo	Accounting, financial and cost management of public hospitals	Orphee Trigone Depenses
CNEH	Hospital billing	Sigma FH FE
DIS	Economic and financial hospital management	Hodis Gestion Economat
Pyrenees Inform.	Management of clinics and hospitals	GAC
DOS	Staff salaries and absenteeism management in a hospital	Hodis Paie
Kalamazoo	Staff salaries for health and social services agencies	Athena Paye
Kalamazoo	General and budget accounting for health services agencies	Athena Compta
CEGI	Management of services provided by public hospitals	CEGI Clinique
Kalamazoo	Staff salaries and absenteeism in hospitals or retirement homes	Orphee Trigone Paie
Kalamazoo	Patient billing and management of files in a public hospital or retirement home	Orphee Trigone Recettes
CNEH	Management of assets and loans in a public hospital	Pacha

Table 8.2 lists products on microcomputers, with installations in more than 350 sites.

8.5.3 Aids to Medical Practice

Product leaders are listed in Table 8.3.

8.6 Qualitative Analysis

8.6.1 Hospital Management

France has almost 1,100 public hospitals and 2,700 private establishments.

The hospital computer market for the public sector alone represents almost FF 2 billion per year and promises a sustained growth rate over the next few years.

The organization of this market is experiencing profound changes. French public hospitals have been choosing their own computer services since January 1989. Before then, hospital computerization was administratively controlled. Hospitals had to deal with production centres, such as the Regional Hospital Informatics Services (CRIH) that played a role similar to the CES firms.

Competition with the private sector is now the norm. Nevertheless, taking into account their skills and knowledge of the hospital market, CRIH agencies are still an obstacle the CES firms and suppliers wishing to break into this market have to overcome. The trend is toward a sharing of skills between the various participants while CRIH agencies, CES firms and manufacturers are forming partnerships.

Table 8.2

Supplier	Uses	Software
Distal	Management of patient files and honoraria	Distal Medigest
Microconcept	Management of medical or paramedical offices	Equinox
Olivetti Office	Management of a medical office	Olipro Medecin DIA
SA Solutions	Management of an independent nursing office	Globuline
Prokov Editions	Management of patient files in a medical office	Medistory Fichier
LOGI 27	Management of a dental office – graphic representation of procedures	Gesdent
EDIG Informatique	Management of a medical office	Hippocrate
Prokov Editions	Accounting management of a medical office	Medistory Compta
Synthèse Informatique	Management of medical activities	Medisys

Table 8.3

Supplier	Uses	Software
Editions France Monde	Accounts of specialized medical examinations	Nautilus
LOGI Soft	Basic management of medical data and statistical analyses	Medlog
Cabinet Attali Baccara	Expert systems for health	Mithridiate
Status Informatique	Expert systems in orthodontics	Ortho Profeel

Public hospitals are interested in rekindling the market as they seek to master their activities and control rising costs. New hospital reform measures in France, in particular the introduction of the PMSI, a program to computerize medical information will change the hospital's computer applications considerably.

Software designers should integrate both the PMSI regulations and those of the National Commission on Informatics and Freedom of Information (CNIL)

and keep informed of the developments in health sector informatics.

A unique, computerized medical file for each patient is a priority of French hospitals – especially for the Assistance Publique (Health and Welfare) in Paris. Telematic servers and other applications that improve communications between hospitals and city doctors are also being studied. Technical services management, computerization of emergencies, are areas open to foreign products.

8.6.2 Other Applications (Medical Offices, Medical Practices)

Of the 100,000 private doctors in France, 25% to 30% have a microcomputer but very few actually use them. Only about 6% of doctors use medical file management software.

Computerization is progressing slowly and demand is mainly for products that are easy to use.

Systems that help medical practices are little used by doctors although several are being evaluated by hospitals. Expert systems are mainly applied to automatic interpretation of x-rays or digitized images.

8.7 Sources of Information and Promotion

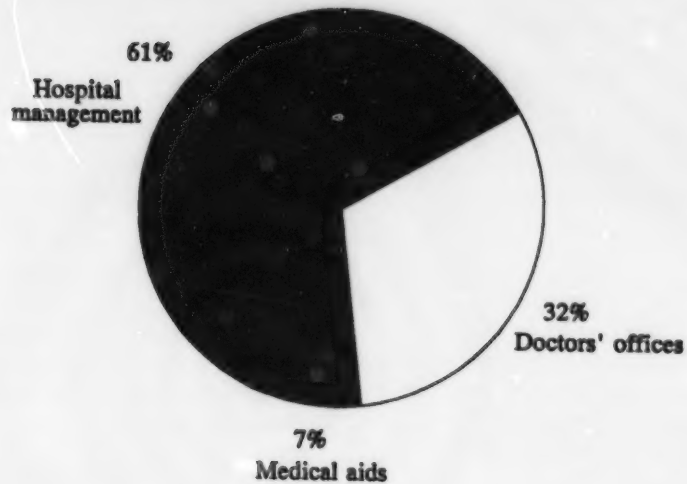
- Hospital Expo
Hospital equipment exhibition
2 to 6 December 1991

- MEDEC
Medical exhibition, including Informedica an exhibition of medical computers
30 March to 2 April 1992
- Informatique Hospitaliere
17 to 19 June 1992, Paris
- Centre national de l'équipement hospitalier (CNEH) (National Hospital Equipment Centre)
Telephone: 19 33 1 40 44 15 15

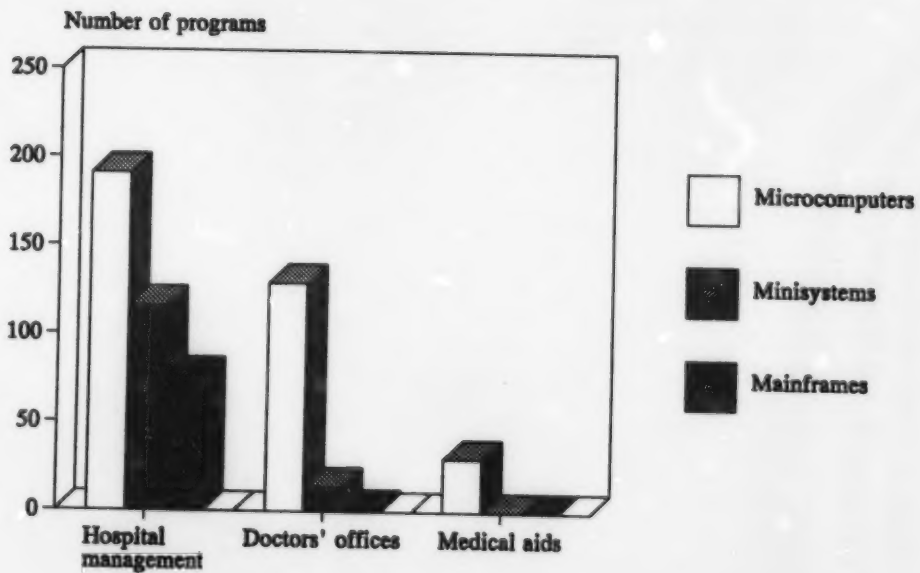
Health Information Systems

Breakdown

(% of the total number of programs in the segment)



Hardware



APPENDIX: METHODOLOGY

1.0 Sources of Information

This study was based on three sources of information:

- the software data base managed by CXP;
- consultation with various CXP Centres de Compétence who ensure a permanent follow-up of the market; and
- the use of external document sources.

The CXP database includes 12,300 software packages, both domestic and imported, actively sold on the French market, and more than 8,500 addresses of national and European vendors. It is a unique source of information on the software market.

A software package is a coherent and complete group of programs, services (installation help, training, maintenance), information handling supports and documentation. It is a standard product intended for use by the largest possible number of users. From a legal point of view, a software package is the object of a licensing agreement.

The programs followed by CXP from year to year work on both mini and mainframe systems and on microcomputer systems. They are used in all sectors of economic activity. There is a public access videotext version of this data base. This data base is updated regularly on the basis of information provided by European software vendors. Thus, over 1000 updates are done every week.

2.0 Some Methodological Specifications

The quantitative description of the various segments of the software market was based on information extracted from the CXP database.

This study only examined software that was being actively sold on the French market; that is software effectively sold each year and having either regular updates or new users.

A given software package may operate on several different types of hardware – microcomputers, mini or mainframe systems. This was taken into account in one or more of these large categories.

The minimum number of users was estimated for each software package and takes into account the modularity and portability characteristics of the product. It does not include costs related to the installation of the product (assistance, training) or maintenance costs.

When the data base includes the number of sites where the software is installed, the figure was provided to CXP by the vendor.

Finally, monetary conversions were done based on: 1 Canadian dollar = 5 French francs.